UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/938,624	08/27/2001	Yuji Takahashi	P 282918 T36-135314M/KOH	2348

7590 05/30/2003

Sean M McGinn
McGinn & Gibb PLLC
8321 Old Courthouse Road
Suite 200
Vienna, VA 22182-3817

EXAMINER	
ZIMMERMAN, GLENN	
ART UNIT	**PAPER NUMBER**
2879	

DATE MAILED: 05/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/938,624	TAKAHASHI ET AL.	
	Examiner	Art Unit	
	Glenn Zimmerman	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-32 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) 1-11,15,17-19,21-23,25-27,29 and 32 is/are rejected.

7)☒ Claim(s) 12-14,16,20,24,28,30 and 31 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 04 October 2001 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 16 (16 looks like it should be 19 in the figures) and 172a. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities: On page 17 line 4, the examiner suggests changing "trough" to - -through--. On page 23 line 22, the examiner suggest changing "Agranularmaterial" to –A granular material--. There are several instances within the specification and claims where words are blurred together like the previous objection. Another is in claim 3 line 2 with "saidfluorescentmaterial". The examiner suggests going through the entire specification and claims again to find these occurrences and correct them.

Appropriate correction is required.

Claim Rej ctions - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1, 2 and 4 are rejected under 35 U.S.C. 102(a) as being anticipated by Ueda et al. Japanese Patent Application Publication JP2000030280.

Regarding claim 1, Ueda et al. disclose a light-emitting unit comprising: a light-emitting device for emitting light with a wavelength range of from 360 nm to 550 nm **(paragraph 12 and 6; InGaN blue LED)**; and a fluorescent material made of Ca-Al-Si-O-N oxynitride activated with Eu^{2+} **(paragraph 27)**; wherein a part **(paragraph 4 lights mix together)** of the light emitted from the light-emitting device is emitted outward after it is subjected to wavelength conversion by the fluorescent material.

Regarding claim 2, Ueda et al. disclose a light-emitting unit according to claim 1, wherein the light-emitting device emits light with a wavelength range of from 450 nm to 550 nm **(paragraph 6 and 12)**, and wherein the part of the light with the converted wavelength is mixed with the other part of the light emitted from the light-emitting device, so that white light is emitted **(paragraph 4, 12 and 48)**.

Regarding claim 4, Ueda et al. disclose a light-emitting unit according to claim 1, wherein the fluorescent material is constituted by a glassy material **(paragraph 8, 10 and 27; oxy-nitride glass which has an excitation spectrum in the large wavelength range)**.

Regarding claim 5, Ueda et al. disclose a light-emitting unit according to claim 1, wherein the light-emitting device is constituted by a group III nitride compound semiconductor light-emitting device **(paragraphs 7, 12 and 31; Claim 4; InGaN)**.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-6, 15, 17-19, 23 and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hohn et al. U.S. Patent 6,066,861 in view of Ueda et al. Japanese Patent Application Publication JP2000030280.

Regarding claims 1 and 4, Hohn et al. teach a light-emitting unit comprising: a light-emitting device **(radiation-emitting semiconductor body $Ga_xIn_{1-x}N$ or $Ga_xAl_{1-x}N$ Figs 1-5 ref. 1)** for emitting light with a wavelength range of from 360 nm to 550 nm **(col. 4 line 59)**; and a fluorescent material **(luminous substance particle ref. 6)** wherein a part of light emitted from the light-emitting device is emitted outward after it is subjected to wavelength conversion by the fluorescent material **(col. 2 line 1; col. 3 line 40-47)**, but fails to teach fluorescent material made of Ca-Al-Si-O-N oxynitride activated with Eu^{2+} constituted by a glassy material. Ueda et al. in the analogous art teach fluorescent material made of Ca-Al-Si-O-N oxynitride activated with Eu^{2+} constituted by a glassy material **(paragraph 20, 21 and 27)**. Additionally, Ueda et al.

teach incorporation of such a fluorescent material made of Ca-Al-Si-O-N oxynitride activated with Eu^{2+} constituted by a glassy material to improve excitation efficiency for various kinds of blue light emitting diodes **(abstract; paragraph 29-31 and especially 31)**.

Consequently it would have been obvious to a person having ordinary skill in the art at the time the invention was made to use a fluorescent material made of Ca-Al-Si-O-N oxynitride activated with Eu^{2+} constituted by a glassy material for the fluorescent material of Hohn et al. since such a modification would improve excitation efficiency for various kinds of blue light emitting diodes as taught by Ueda et al.

Referring to claim 2, Hohn et al. teach all of the limitations of the claim. Hohn et al. teach a light-emitting unit according to claim 1, wherein the light-emitting device emits light with a wavelength range of from 450 nm to 550 nm **(col. 5 lines 30-39)**, and wherein the part of the light with the converted wavelength is mixed **(col. 5 lines 15-30)** with the other part of the light emitted from the light-emitting device, so that white light is emitted.

Referring to claim 3, Hohn et al. teach all of the limitations of the claim. Hohn et al. teach a light-emitting unit according to claim 1, wherein the fluorescent material is constituted by a powdery or granular material **(col. 2 lines 14-16; luminous substance particle ref. 6)** and is contained in a light-transmissible material **(col. 2 lines 13-14; epoxy casting resin ref. 5)**.

Referring to claim 5, Hohn et al. teach all of the limitations of the claim. Hohn et al. teach a light-emitting unit according to claim 1, wherein the light-emitting device is

constituted by a group III nitride compound semiconductor light-emitting device **(radiation-emitting semiconductor body $Ga_xIn_{1-x}N$ or $Ga_xAl_{1-x}N$ Figs 1-5 ref. 1)**.

Referring to claim 6, Hohn et al. teach all of the limitations of the claim. Hohn et al. teach a light-emitting unit according to claim 3, wherein the light-emitting device is mounted in a cup portion **(recess ref. 9)** provided in a lead frame **(basic housing and part ref. 8 and 16 respectively)**, and the cup is filled with the light-transmissible material containing the fluorescent material **(col. 8 lines 55-57 and 10-15)**.

Referring to claim 15, Hohn et al. teach a light-emitting unit according to claim 3, wherein a reflection plate **(col. 8 lines 47-49)** is provided in a light-emitting direction of the light-emitting device.

Referring to claim 17, Hohn et al. teach a light-emitting unit according to claim 3, wherein a fluorescent layer **(Fig. 2 and 5 ref. 5)** made from the light-transmissible material containing the fluorescent material is provided in a light-emitting direction of the light-emitting device.

Referring to claim 18, Hohn et al. teach a light-emitting unit according to claim 17, further comprising a light guide **(transparent housing envelope Fig. 5 ref. 10)** having a light introduction surface and a light-emitting surface, wherein the light-emitting device is disposed so as to face the light introduction surface of the light guide, and the fluorescent layer **(wavelength converting casting or potting composition Fig. 5 ref. 5)** is disposed between the semiconductor light-emitting device and the light introduction surface of the light guide.

Referring to claim 19, Hohn et al. teach a light-emitting unit according to claim 17, further comprising a light guide having **(transparent housing envelope Fig. 5 ref. 10)** a light introduction surface and a light-emitting surface, wherein the light-emitting device is disposed so as to face the light introduction surface of the light guide, and the fluorescent layer **(wavelength converting casting or potting composition Fig. 5 ref. 5)** is disposed on the light-emitting surface side of the light guide.

Referring to claim 23, Hohn et al. teach a light-emitting unit according to claim 23, wherein a reflection plate is provided in a light-emitting direction of the light-emitting device **(col. 8 lines 47-49)**.

Referring to claim 25, Hohn et al. teach a light-emitting unit according to claim 4, wherein a fluorescent layer made from the fluorescent material is provided in a light-emitting direction of the light-emitting device **(wavelength converting casting or potting composition Figs. 2 and 5 ref. 5)**.

Referring to claim 26, Hohn et al. teach a light-emitting unit according to claim 25, further comprising a light guide **(transparent housing envelope Fig. 5 ref. 10)** having a light introduction surface and a light-emitting surface, wherein the light-emitting device is disposed so as to face the light introduction surface of the light guide, and the fluorescent layer (**wavelength converting casting or potting composition Fig. 5 ref. 5**) is disposed between the semiconductor light-emitting device and the light introduction surface of the light guide.

Referring to claim 27, Hohn et al. teach a light-emitting unit according to claim 25, further comprising a light guide **(transparent housing envelope Fig. 2 ref. 10)**

having a light introduction surface and a light-emitting surface, wherein the light-emitting device is disposed so as to face the light introduction surface of the light guide, and the fluorescent layer (**wavelength converting casting or potting composition Fig. 2 ref. 5**) is disposed on the light-emitting surface side of the light guide.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda et al. Japanese Patent Application Publication JP2000030280 in view of Hohn et al. U.S. Patent 6,066,861.

Regarding claim 3, Ueda et al. teach all the limitations of claim 3, but fail to teach wherein the fluorescent material is constituted by powdery or granular material and is contained in a light-transmissible material. Hohn et al. in the analogous art teach wherein the fluorescent material is constituted by powdery or granular material and is contained in a light-transmissible material **(col. 2 lines 14-19 and 28-37; epoxy casting resin and luminous substance particle Fig 1 or 2 ref. 5 and 6 respectively)**. Additionally, Ueda et al. teach incorporation of such a powdery fluorescent material in a light-transmissible material to improve homogeneous mixed-colored light and particularly white light and enable mass production at a reasonable engineering effort and expense and with maximally replicable component characteristics **(col. 1 lines 63-67; col. 2 lines 1-7; col. 5 lines 15-24)**.

Consequently it would have been obvious to a person having ordinary skill in the art at the time the invention was made to use a fluorecent material constituted by a powdery or granular material and contained in a light-transmissible material in the LED of Ueda et al. since such a modification would improve homogeneous mixed-colored

light and particularly white light and enable mass production at a reasonable engineering effort and expense and with maximally replicable component characteristics as taught by Hohn et al.

Claims 1, 3, 4 and 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Odaki et al. U.S. Patent 6,521,915 in view of Ueda et al. Japanese Patent Application Publication JP2000030280.

Regarding claims 1 and 4, Odaki et al. teach a light-emitting unit comprising: a light-emitting device **(light emitting element Figs. 1A and 1B ref. 1)** for emitting light with a wavelength range of from 360 nm to 550 nm **(col. 4 lines 10-15)**; and a fluorescent material **(fluorescent material ref. 2)** wherein a part of light emitted from the light-emitting device is emitted outward after it is subjected to wavelength conversion by the fluorescent material **(col. 1 lines 10-14)**, but fails to teach fluorescent material made of Ca-Al-Si-O-N oxynitride activated with Eu^{2+} constituted by a glassy material. Ueda et al. in the analogous art teach fluorescent material made of Ca-Al-Si-O-N oxynitride activated with Eu^{2+} constituted by a glassy material **(paragraph 20, 21 and 27)**. Additionally, Ueda et al. teach incorporation of such a fluorescent material made of Ca-Al-Si-O-N oxynitride activated with Eu^{2+} constituted by a glassy material to improve excitation efficiency for various kinds of blue light emitting diodes **(abstract; paragraph 29-31 and especially 31)**.

Consequently it would have been obvious to a person having ordinary skill in the art at the time the invention was made to use a fluorescent material made of Ca-Al-Si-O-N oxynitride activated with Eu^{2+} constituted by a glassy material for the fluorescent

material of Odaki et al. since such a modification would improve excitation efficiency for various kinds of blue light emitting diodes as taught by Ueda et al.

Referring to claim 3, Odaki et al. teach all of the limitations of the claim. Odaki et al. teach a light-emitting unit according to claim 1, wherein the fluorescent material is constituted by a powdery or granular material **(phosphor ref. 4; grains shown in figures 1A and 1B)** and is contained in a light-transmissible material **(resin of the fluorescent layer ref. 2; col. 6 lines 15-18)**.

Referring to claim 7, Odaki et al. teach all of the limitations of the claim. Odaki et al. teach a light-emitting unit according to claim 3, wherein the light-emitting device is mounted in a cup **(cup portion of cup ref. 3)** portion provided in a lead frame **(cup ref. 3)**, and a fluorescent layer **(fluorescent layer ref. 2 or 2')** made from the light-transmissible material containing the fluorescent material is provided on a surface of the light-emitting device.

Referring to claim 8, Odaki et al. teach all of the limitations of the claim. Odaki et al. teach a light-emitting unit according to claim 3, wherein the light-emitting device **(light emitting element Fig. 2A ref. 1)** is mounted in a cup portion **(cup ref. 3)** provided in a lead frame **(lead frame ref. 8)**, and the light-emitting device and a part of the lead frame are covered **(see Fig. 2A)** with the light-transmissible material **(col. 6 line 6)** containing the fluorescent material **(phosphor ref. 4)**.

Referring to claim 9, Odaki et al. teach all of the limitations of claim 9, Odaki et al. teach a light-emitting unit according to claim 3, wherein the light-emitting device is mounted on a substrate **(substrate Figs. 4, 5 ref. 10 and 10')**, and a fluorescent layer

made from the light-transmissible material containing the fluorescent material **(covering member ref. 23 and 21')** is provided on a surface of the light-emitting device.

Referring to claim 10, Odaki et al. teach all the limitations of claim 10, Odaki et al. teach a light-emitting device is mounted on a substrate **(substrate Fig. 2B ref. 10')**, and the light-emitting device is sealed (col. 6 line 12) with the light-transmissible material containing the fluorescent material

Referring to claim 11, Odaki et al. teach all the limitations of claim 11, Odaki et al. teach a light-emitting unit according to claim 3, wherein the light-emitting device is mounted in a cup portion provided in a substrate **(substrate Fig. 2A ref. 10)**, and the cup portion is filled with the light-transmissible material containing the fluorescent material **(phosphor ref. 4; col. 6 line 6)**.

Claims 1, 3, 4, 29 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. U.S. Patent 5,998,925 in view of Ueda et al. Japanese Patent Application Publication JP2000030280.

Regarding claims 1 and 4, Shimizu et al. teach a light-emitting unit **(light emitting diode Fig. 1 and 2 ref. 100 and 200)** comprising: a light-emitting device **(light emitting component ref. 102 and 202)** for emitting light with a wavelength range of from 360 nm to 550 nm **(col. 14 line 43)**; and a fluorescent material **(coating material ref. 101 and 201; col. 17 lines 26-27)** wherein a part of light emitted from the light-emitting device is emitted outward after it is subjected to wavelength conversion by the fluorescent material **(abstract)**, but fails to teach fluorescent material made of Ca-Al-Si-O-N oxynitride activated with Eu^{2+} constituted by a glassy material. Ueda et al. in the

analogous art teach fluorescent material made of Ca-Al-Si-O-N oxynitride activated with Eu^{2+} constituted by a glassy material **(paragraph 20, 21 and 27)**. Additionally, Ueda et al. teach incorporation of such a fluorescent material made of Ca-Al-Si-O-N oxynitride activated with Eu^{2+} constituted by a glassy material to improve excitation efficiency for various kinds of blue light emitting diodes **(abstract; paragraph 29-31 and especially 31)**.

Consequently it would have been obvious to a person having ordinary skill in the art at the time the invention was made to use a fluorescent material made of Ca-Al-Si-O-N oxynitride activated with Eu^{2+} constituted by a glassy material for the fluorescent material of Shimizu et al. since such a modification would improve excitation efficiency for various kinds of blue light emitting diodes as taught by Ueda et al.

Referring to claim 3, Shimizu et al. teach all of the limitations of the claim. Shimizu et al. teach a light-emitting unit according to claim 1, wherein the fluorescent material is constituted by a powdery or granular material **(col. 10 line 61)** and is contained in a light-transmissible material **(col. 16 lines 57-59)**.

Regarding claim 29, Shimizu et al. teach a light-emitting method comprising steps of irradiating a fluorescent material **(coating material ref. 101 and 201; col. 17 lines 25-27)** with light emitted from a light-emitting device **(light emitting component ref. 102 and 202)** with an emission wavelength range of from 360 nm to 550 nm **(col. 14 line 43)** to thereby convert the wavelength of a part of the light; and mixing the part of the light with the converted wavelength with the other part of the light emitted from the light-emitting device to thereby emit resultant light; wherein the light-emitting device

is turned on intermittently **(col. 23 line 28)** , but fail to teach a fluorescent material made of Ca-Al-Si-O-N oxynitride activated with Eu^{2+}. Ueda et al. in the analogous art teach fluorescent material made of Ca-Al-Si-O-N oxynitride activated with Eu^{2+} **(paragraph 20, 21 and 27)**. Additionally, Ueda et al. teach incorporation of such a fluorescent material made of Ca-Al-Si-O-N oxynitride activated with Eu^{2+} to improve excitation efficiency for various kinds of blue light emitting diodes **(abstract; paragraph 29-31 and especially 31)**.

Consequently it would have been obvious to a person having ordinary skill in the art at the time the invention was made to use a fluorescent material made of Ca-Al-Si-O-N oxynitride activated with Eu^{2+} for the fluorescent material of Shimizu et al. since such a modification would improve excitation efficiency for various kinds of blue light emitting diodes as taught by Ueda et al.

Referring to claim 32, Shimizu et al. teach all of the limitations of the claim. Shimizu et al. teach a light-emitting method according to claim 29, wherein the light-emitting device is constituted by a group III nitride compound semiconductor light-emitting device **(claim 1; col. 13 line 60)**.

Claims 1, 4, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mueller et al. U.S. Patent 6,417,019 in view of Ueda et al. Japanese Patent Application Publication JP2000030280.

Regarding claims 1 and 4, Mueller et al. teach a light-emitting unit **(title)** comprising: a light-emitting device **(LED Fig. 5 r-f. 8)** for emitting light with a wavelength range of from 360 nm to 550 nm **(col. 2 line 7; col. 1 line)**; and a

fluorescent material **(phosphor particle ref. 4; phosphor layer ref. 37)** wherein a part of light emitted from the light-emitting device is emitted outward after it is subjected to wavelength conversion by the fluorescent material **(at least a portion in the abstract)**, but fails to teach fluorescent material made of Ca-Al-Si-O-N oxynitride activated with Eu^{2+} constituted by a glassy material. Ueda et al. in the analogous art teach fluorescent material made of Ca-Al-Si-O-N oxynitride activated with Eu^{2+} constituted by a glassy material **(paragraph 20, 21 and 27)**. Additionally, Ueda et al. teach incorporation of such a fluorescent material made of Ca-Al-Si-O-N oxynitride activated with Eu^{2+} constituted by a glassy material to improve excitation efficiency for various kinds of blue light emitting diodes **(abstract; paragraph 29-31 and especially 31)**.

Consequently it would have been obvious to a person having ordinary skill in the art at the time the invention was made to use a fluorescent material made of Ca-Al-Si-O-N oxynitride activated with Eu^{2+} constituted by a glassy material for the fluorescent material of Mueller et al. since such a modification would improve excitation efficiency for various kinds of blue light emitting diodes as taught by Ueda et al.

Referring to claim 21, Mueller et al. teach a light-emitting unit according to claim 4, wherein a fluorescent layer made from the fluorescent material is provided on a substrate surface of the light-emitting device **(Fig. 5 ref. 37 and 8)**. One can see from figure 5 that the phosphor layer covers the sides and the top of the LED. Figure 2 which is the LED shows that the substrate has exposed areas on the side which are covered by the phosphor layer.

Referring to claim 22, Mueller et al. teach a light-emitting unit according to 21, wherein a fluorescent layer made from the fluorescent material is also provided on a side surface of the light-emitting device **(Fig. 5 ref. 8 and 37)**.

Allowable Subject Matter

Claims 12-14, 16, 20, 24, 28, 30 and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 12, the following is an examiner's statement of reasons for allowance: The prior art of record neither shows nor suggests a light-emitting unit including the combination of all the limitations as set forth in claim 12, and specifically wherein the light-emitting device is mounted in a cup portion provided in a substrate, and could not be found elsewhere in prior art.

Regarding claim 13, the following is an examiner's statement of reasons for allowance: The prior art of record neither shows nor suggests a light-emitting unit including the combination of all the limitations as set forth in claim 13, and specifically wherein a fluorescent layer made from the light-transmissible material containing the fluorescent material is provided on a substrate surface of the light-emitting device could not be found elsewhere in prior art.

Regarding claim 14, claim 14 is allowed for the reasons given in claim 13, because of its dependency status on claim 13.

Regarding claim 16, the following is an examiner's statement of reasons for allowance: The prior art of record neither shows nor suggests a light-emitting unit including the combination of all the limitations as set forth in claim 16, and specifically wherein a fluorescent layer made from the light-transmissible material containing the fluorescent material is provided on a surface of the reflection plate opposite to the light-emitting device could not be found elsewhere in prior art.

Regarding claim 20, the following is an examiner's statement of reasons for allowance: The prior art of record neither shows nor suggests a light-emitting unit including the combination of all the limitations as set forth in claim 20, and specifically further comprising a layer of a light-transmissible material disposed between the light guide and the fluorescent layer could not be found elsewhere in prior art.

Regarding claim 24, the following is an examiner's statement of reasons for allowance: The prior art of record neither shows nor suggests a light-emitting unit including the combination of all the limitations as set forth in claim 24, and specifically wherein the reflection plate is made from the fluorescent material, and a surface of the reflection plate opposite to a surface facing the light-emitting device is planished as a mirror surface could not be found elsewhere in prior art.

Regarding claim 28, the following is an examiner's statement of reasons for allowance: The prior art of record neither shows nor suggests a light-emitting unit including the combination of all the limitations as set forth in claim 28, and specifically further comprising a layer of a light-transmissible material disposed between the light guide and the fluorescent layer could not be found elsewhere in prior art.

Regarding claim 30, the following is an examiner's statement of reasons for allowance: The prior art of record neither shows nor suggests a light-emitting method including the combination of all the limitations as set forth in claim 30, and specifically wherein the time when the light-emitting device is turned on is adjusted to thereby adjust the color of light emitted from the light-emitting unit could not be found elsewhere in prior art.

Regarding claim 31, claim 31 is allowed for the reasons given in claim 30, because of its dependency status on claim 30.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yasuda et al. Japanese Patent Application Publication 2002033521.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Glenn Zimmerman whose telephone number is (703) 308-8991. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (703) 305-4794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7382 for regular communications and (703) 308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is n/a.

Glenn Zimmerman
May 16, 2003

ASHOK PATEL
PRIMARY EXAMINER